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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/030,710	02/25/1998	PETER C. CHEN	M-3206-1C	7700

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SKJERVEN MORRILL LLP
25 METRO DRIVE
SUITE 700
SAN JOSE, CA 95110

EXAMINER

DINH, DUNG C

ART UNIT	PAPER NUMBER
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2153

DATE MAILED: 09/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AD

Office Action Summary

Application No.

09/030,710

Applicant(s)

CHEN, PETER C. *W*

Examiner

Dung Dinh

Art Unit

2153

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-10, 17-19, 21-28, 30-35 and 38-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10, 17-19, 21-28, 30-35, 38-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2153

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 6/24/03 have been fully considered but they are not persuasive.

Regarding the 35 USC 112 2nd paragraph rejection of claim 24, applicant argued that the term "software modem" is adequately described in the specification. The argument is not persuasive. The term "software modem" as recited in claim 24 is indefinite because it does not set forth the ^{met}~~met~~ and bound of the claim. It is unclear from the specification what combination of elements constitute a "software modem".

Applicant referred to fig.2, page 12 lines 13-15Page 12, lines 13-15, and page 13 lines 29-34 for support of the term "software modem". Figure 2 shows a box 223 labeled as "software modem" in between box 222 "software UART" and box 224 "I/O handler". Page 12 lines 13-15 of the specification recites "software UART 222 and I/O handler 224 are part of a software modem." Page 13 lines 29-34 recites that an application may communicate to the software modem in the same manner as to a conventional hardware modem.

Applicant maybe his own lexicographer. However, the term must be clearly defined in the specification. The figure 2 shows the "software modem", "software UART", and "I/O handler"

Art Unit: 2153

as separate elements. Page 12 recites that the "software UART" and the "I/O handler" is part of the "Software modem". Page 13 merely discloses that an application may communicate to the "software modem" like a conventional modem. The exact ~~mean~~^{note} and bound of the term "software modem" is not clear. The term "software modem" serves nothing more than a label. Using the label "software modem" in the claim without further functional limitations is like reciting "mean for" without reciting the function thereof. The rejection of claim 24 under 34 USC 112 2nd paragraph, for failure to distinctly claim the invention, is maintained.

As per the 35 USC 102 rejection of claim 24, applicant argued that the Suffern reference does not teach "communication driver" as recite in the claim. Claim 24 recites "a communication driver executable by a host computer, the communication driver comprising a software modem."

Dictionary of Computers, Information Processing & Telecommunication defines driver as "a program that controls a peripheral unit connected on line." Hence a "communication driver" would be a program that controls a communication unit.

Suffern provides a demonstration program running on a host computer to exchange data to a communication interface device 15

Art Unit: 2153

connected to the host computer. The device 15 is a communication device. The program contains software routine for controlling the device 15 [see fig.4, col.2 lines 45-68, col.5 lines 31-65]. The program also has routines for performing DSP functions that would normally done by hardware in a conventional modem. Hence, Suffern's program read on the "communication driver comprising a software modem" as claimed.

As per the 102 rejection of claims 33 and 43, Applicant argued that Suffern does not teach providing data received to an operating system. Dictionary of Computers, Information Processing & Telecommunication defines "operating system" as "software that controls the execution of a computer program, and that may provide scheduling, debugging, input-output control, ... and related services."

Suffern provides a set of rudimental programs to demonstrate the operation of a host based modem DSP processing in conjunction with a minimal hardware communication device 15. Refer to fig.4, the Data Terminal box 101 is a software that coordinate and control input/output to the device 15, and provides data to screen handling program 103. Hence Data Terminal 101 can be interpreted to be an "operating system" as defined above.

Art Unit: 2153

As per the 35 US 103 rejections of the claims, Applicant argued that Suffern and Bailey can not be combined because Bailey teaches to reduces load on a CPU whereas Suffern teaches to increase processing load on the CPU. The argument is not persuasive because the CPU load is immaterial to the combination of the references as made in the rejection.

Suffern teaches a new, non-standard modem, essentially the same as the present invention, that uses processing power from the host computer CPU to perform processing functions that would have been done by hardware on a conventional modem. Suffern provides a set of programs to demonstrate how to interface this device to the host computer and to demonstrate how to perform modem DSP processing using the host CPU. Suffern does not disclose the actual production software - e.g. a device driver for use with a standard operating system so that application software can communicate with this non-standard modem.

Bailey teaches an improved method [i.e. in non-standard way] for interfacing a modem to the computer. Bailey teaches a device driver to facilitate application programs to communicate to this new modem interface like a standard modem interface; so that the application programs do not have to be modified to communicate to this new device.

Art Unit: 2153

Given the teaching of Suffern and Bailey, one of ordinary skill in the art would have motivated to apply the device driver teaching of Bailey to the modem of Suffern in order to enable application programs to communicate with Suffern's modem.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 24 merely recites "a communication driver ... comprising a software modem". It is unclear what elements or functions would constitute a "software modem". One of ordinary skill in the art would not be reasonably apprised of the scope of the claim.

Claim Rejections - 35 USC § 102

Art Unit: 2153

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claim 24, 33, 35, 43-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Suffern et al. US patent 5,646,983.

As per claim 24, Suffern teaches a system for using a host processor to perform modem transmissions functions [modulation and demodulation functions -- see abstract]. Since Suffern's software program provides control and interfaces with the conversion interface adapter 15 [see figure 4], it meets the definition of a communication driver as claimed.

Art Unit: 2153

As per claim 33 , Suffern teaches converting analog signal from a communication medium by an analog to digital converter [fig.4 adapter 15];

determining data received based on waveform represented by the sampled digital values [fig.4 demodulation 109] by a processing unit [fig.3 Microprocessor 22] coupled to the converter by a local bus [fig.3 bus 28];

providing data to an operating system [fig.4 Data Terminal and Screen Handling] .

As per claim 35, Suffern teaches generating digital values and transmitting analog signal by the digital to analog converter coupled to the processing unit by the bus [fig.4 Data Modulation 113, Digital-to-Analog Conversion 40] .

As per claim 36, Suffern teaches a communication device [fig.3 adapter 15] comprising:

at least one register [fig.3 register 43] coupable to a bus of a computer;

an analog to digital converter [40] coupable to a communication medium [31], the analog to digital converter being coupled to the register [line 41] to provide thereto a plurality of sampled digital values representing a waveform in the analog

Art Unit: 2153

communication signal [apparent in the functioning of the adapter 15, see fig.2].

As per claim 37, Suffern teaches a digital to analog converter [see fig.3, fig.4 #40] couple to the register [56] to receive a series of digital data values, the digital to analog converter being coupled to the communication medium [31] to transmit analog signal thereto, the analog signal providing carrier signal and data values formatted according to a standard modem protocol [apparent in the functioning of the adapter 15].

As per claim 43, it is rejected under similar rationale as for claim 33 above.

As per claim 44, it is rejected under similar rationale as for claim 35 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2153

Claims 1-2; 4, 6-9; 17-18, 23; 19, 21-22; 25-28; 30-32, 33, 35, 38-42, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suffern et al. US patent 5,646,983 and further in view of Bailey et al. US patent 5,644,593.

As per claim 1, Suffern teaches a system comprising:

a computer having a processing unit [fig.3 Microprocessor 22], a main memory [24] and a local bus [28];

a device [fig.3 interface card 15] coupled to the local bus, wherein the device occupies an I/O slot on the local bus [col.3 lines 25-30] and is accessible at a first set of addresses corresponding to a first communication port [apparent from col. 8 lines 15-18, since the device occupies addresses of one of the COM ports],

the device has a register set [fig.3 counter 70, control unit 50, latch 74,80,54 and shift register 43] different than a register set for a UART [apparent since the device does not have convention processing and interface of a standard modem]; and

Suffern does not disclose a communication driver with a UART emulation as claimed. Suffern only discloses a sample program codes for interfacing to the device 15 and for using the computer's processor for performing signal processing on behave of the device 15.

Art Unit: 2153

Bailey discloses a method for enabling application software to communicate with a non-standard device by emulating a standard serial interface (i.e. communication via a UART) [see col.13 lines 5-10, col.16 lines 24-36. Bailey does not specifically uses the term "UART emulation". However, Bailey's serial interface emulation is an "UART emulation" because, as is well known in the art, serial interface uses protocol conforming to a UART; and Bailey's serial interface emulation performs essentially identical functions as the UART emulation of the present invention].

It would have been obvious for one of ordinary skill in the art to uses the driver of Bailey with the device of Suffern because it would have enable the device of Suffern to be used by existing application software written for communicating to a standard serial interface without modification to the application software.

As per claim 2, it is inherent that the local bus comprises an ISA bus since Suffern uses an IBM-compatible personal computer.

As per claim 4, 7-8, they are rejected under similar rationale as for claim 1 above. Bailey teaches allocating memory of the computer for storing data corresponds to registers of a UART, transmitting and updating value in the storage locations [col.16 lines 23-36].

Art Unit: 2153

As per claim 6, it is apparent that the system as modified would have to have I/O handler for transferring data to/from the driver to the appropriate registers in the device in order for the driver software to communicate and transfer data between the computer and the device.

As per claim 9, it is apparent that the device of Suffern is allocated a base address corresponding an I/O slot for a UART [col. 8 lines 15-18, since the device occupies addresses of one of the COM ports].

As per claim 17, it is rejected under similar rationale as for claim 1 above.

As per claim 18, it is apparent from Bailey col.16 lines 23-35, that the serial port emulation would function the same way whether the access to the UART register is done directly by an application software or by the operating system.

As per claims 19, 25, 27, they are rejected under similar rationale as for claims 1. Bailey teaches allocating memory of the computer for storing data corresponds to registers of a UART, transmitting and updating value in the storage locations [col.16 lines 23-36].

As per claims 21 and 26, Suffern teaches modem software that implements a conversion between data and digital samples

Art Unit: 2153

representing a signal in accordance with a communication protocol [col.3 lines 45-68].

As per claims 22 and 23, Bailey does not disclosed the specific registers being emulated. However the recited registers: line control, status, and modem control are standard in a PC serial interface. Hence, it is apparent that the system as modified would have had emulated these registers in order to provide full compatibility to existing communication software.

As per claim 28, Suffern teaches analog-to-digital and digital-to-analog converters [see fig.4].

As per claim 30, Suffern teaches a device comprising an analog to digital converter coupable to a communication medium to receive there from an analog communication signal [fig.3, fig.4: interface card 15];

a computer comprising processing unit coupled to the device, to receive there from a plurality of sampled digital values, the processing unit being program with a software modem to determine data received, based on a waveform represented by the sample digital values [fig.4 Host computer 20, col.2 lines 6-10].

Suffern does not specifically disclose the usage of the device by application programs as it is a standard hardware modem. Bailey teaches a device driver for a non-standard modem that

Art Unit: 2153

enabled application programs to communicate with the device in the same manner as with a hardware modem [Bailey col.7 lines 55-68]. Hence, it would have been obvious for one of ordinary skill in the art to implement the driver of Bailey to work with the modem of Suffern because it would have enable existing application programs to communicate with the modem without modification.

As per claim 31, Suffern teaches using interrupts to reads and transfer data to the adapter card [see col.7 lines 1-10, col.8 lines 15-18].

As per claim 32, it is inherent that the data sent by the software modem to the adapter 15 would have carrier signal and data format according to a standard modem protocol in order to they system of Suffern to function as a modem.

As per claims 33 and 43, Suffern teaches a system essentially as claimed having a computer processing unit using software to process digital wave signal data from a device coupled to the local bus [col.3 lines 45-68]. Suffern does not specifically disclose driver for providing data to an operating system.

Bailey discloses a method for enabling application software to communicate with a non-standard device by emulating a standard serial interface (i.e. communication via a UART) [see col.13 lines

Art Unit: 2153

5-10, col.16 lines 24-36] to provide data to the operating and application software.

It would have been obvious for one of ordinary skill in the art to use the driver of Bailey with the device of Suffern because it would have enabled the device of Suffern to be used by existing application software written for communicating to a standard serial interface without modification to the application software.

As per claims 35 and 44, Suffern teaches generating digital values and transmitting analog signal using digital-to-analog converter on the device [col.3 lines 60-68].

As per claim 38, it is rejected under similar rationale as for claim 6 above.

As per claims 39-42 and 45, it is apparent that the computer of Suffern has a second device with UART (it is well known in the art that the PC has two standard serial ports COM1 and COM2 each having a hardware UART). The limitations recited are inherent in the computer of Suffern's system as modified.

Claims 3, 10, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination Suffern et al. and Bailey and further in view of Gibson et al. US patent 5,640,594.

Art Unit: 2153

As per claim 3, Suffern does not specifically disclose a means in the device for assigning a base I/O address to be occupied by the device.

Gibson teaches a device couple to a local bus comprising:

a comparator [fig.4A #312];

a pattern generator [fig.4A SEQ(count)] coupled to the comparator;

a counter [fig.4A COUNT] operable couple to the comparator and the pattern generator;

a register [fig.4B #324 accept data for device programming] coupled to the counter to receive signal from the local bus in respond to the counter reaching a final state [fig.4A #316].

It would have been obvious for one of ordinary skill in the art to provide the means above in the modem device of Ramaswamy because it would have enable the operating system to automatically assign I/O address to the device.

As per claims 10 and 34, it is rejected under similar rationale as for claim 3 above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2153

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Dinh whose telephone number is (703) 305-9655. The examiner can normally be reached on Monday-Thursday from 7:00 AM - 4:30 PM. The examiner can also be reached on alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached at (703) 305-4792.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks
Washington, DC 20231

or faxed to:

Art Unit: 2153

(703) 746-7238, (for formal communications; please mark "EXPEDITED PROCEDURE")

(703) 746-7240 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA, Fourth Floor (Receptionist).



Dung Dinh
Primary Examiner
Sept. 20, 2002